

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended): A cannister-style toroidal vortex vacuum cleaner system utilizing a fluid flow, said cannister toroidal vortex vacuum cleaner comprising:

a cannister-style vacuum cleaner housing;

a centrifugal separator located within said housing;

fluid delivery means fluidly coupled to said centrifugal separator;

~~separation means; and~~

a toroidal vortex nozzle comprising;

~~wherein said fluid flow recirculates between said toroidal vortex nozzle and said separation means.~~

an outer tube fluidly coupled to said centrifugal separator at a proximal end, a distal end of said outer tube being open to the atmosphere;

an inner tube coaxially positioned inside said outer tube, wherein a gap between said inner tube and said outer tube forms an annular delivery duct which receives said fluid flow from said fluid delivery means; and

guide means to guide said fluid flow out of said
annular delivery duct and into said inner
tube, said guide means comprising an inner
fairing positioned at a distal end of said
inner tube;

wherein said guide means guide said flow such that
said flow has substantially the characteristics
of a toroidal vortex, and further wherein said
fluid flow does not escape substantially into the
atmosphere outside of said outer tube.

2. (Currently amended): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 wherein said toroidal vortex nozzle is vented between said inner tube and said outer tube.

3. (Cancelled)

4. (Previously presented): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 wherein said toroidal vortex nozzle further comprises a brush.

5. (Previously presented): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 wherein said toroidal vortex nozzle further comprises a rotating brush.

6. (Previously presented): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 wherein said toroidal vortex nozzle further comprises a wheel.

7. (Currently amended): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 wherein said toroidal vortex nozzle is hinged between said toroidal vortex nozzle and said ~~separation means~~ centrifugal separator.

8. (Previously presented): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 further comprising a hose removably attached at a first end to said toroidal vortex nozzle and removably attached at a second end to said housing.

9. (Previously presented): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 having a hose removably attached to said housing being capable of being fitted with interchangeable toroidal vortex nozzle attachments.

10. (Currently amended): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 further comprising a hose that couples said toroidal vortex nozzle to said ~~separation means~~ centrifugal separator.

11. (Currently amended): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 further comprising a hose removably attached at a first end to said toroidal vortex nozzle and removably attached at a second end to said housing where the hose comprises a plurality of tubes in [[of]] a side by side configuration.

12. (Currently amended): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 further comprising a hose removably attached at a first end to said toroidal vortex nozzle and removably attached at a second end to said housing where the hose comprises a plurality of tubes in [[of]] a siamese twin configuration.

13. (Currently amended): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 further comprising a hose removably attached at a first end to said toroidal vortex nozzle and removably attached at a second end to said housing where the hose comprises a plurality of tubes in [[of]] a concentric configuration.

14. (Previously presented): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 further comprising a flexible hose removably attached at a first end to said toroidal vortex nozzle and removably attached at a second end to said housing.

15. (Previously presented): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 having a removable hose removably attached at a first end to said toroidal vortex nozzle and removably attached at a second end to said housing.

16. (Previously presented): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 further comprising a handle removably attached to said housing.

17. (Currently amended): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 further comprising a container coupled to said ~~separation means~~ centrifugal separator.

18. (Currently amended): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 further comprising a removable container coupled to said ~~separation means~~ centrifugal separator.

19. (Canceled)

20. (Currently amended): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 wherein at least one of said fluid delivery means and said ~~separation means~~ centrifugal separator is disposed inside said cannister-style vacuum cleaner housing.

21. (Currently amended): The cannister toroidal vortex vacuum cleaner system in accordance with claim 1 further comprising a ~~course~~ coarse mesh trap upstream of said ~~separation means~~ centrifugal separator to protect said fluid delivery means from large objects in said fluid flow.

22. (Currently amended): An upright-style toroidal vortex vacuum cleaner system utilizing fluid flow, said upright-style toroidal vortex vacuum cleaner comprising:

an upright-style vacuum cleaner housing;

a centrifugal separator located within said housing;

fluid delivery means fluidly coupled to said centrifugal separator;

~~separation means disposed; and~~

a toroidal vortex nozzle comprising;

~~wherein said fluid flow recirculates between said toroidal vortex nozzle and said separation means.~~

an outer tube fluidly coupled to said centrifugal separator at a proximal end, a distal end of said outer tube being open to the atmosphere;

an inner tube coaxially positioned inside said outer tube, wherein a gap between said inner tube and said outer tube forms an annular

delivery duct which receives said fluid flow
from said fluid delivery means; and
guide means to guide said fluid flow out of said
annular delivery duct and into said inner
tube, said guide means comprising an inner
fairing positioned at a distal end of said
inner tube;

wherein said guide means guide said flow such that
said flow has substantially the characteristics
of a toroidal vortex, and further wherein said
fluid flow does not escape substantially into the
atmosphere outside of said outer tube.

23. (Currently amended): The upright toroidal vortex vacuum cleaner system in accordance with claim 22 wherein said toroidal vortex nozzle is vented between said inner tube and said outer tube.

24. (Cancelled)

25. (Previously presented): The upright toroidal vortex vacuum cleaner system in accordance with claim 22 wherein said toroidal vortex nozzle further comprises a brush.

26. (Previously presented): The upright toroidal vortex vacuum cleaner system in accordance with claim 22 wherein

said toroidal vortex nozzle further comprises a rotating brush.

27. (Previously presented): The upright toroidal vortex vacuum cleaner system in accordance with claim 22 wherein said toroidal vortex nozzle further comprises a wheel.

28. (Currently amended): The upright toroidal vortex vacuum cleaner system in accordance with claim 22 wherein said toroidal vortex nozzle is hinged between said toroidal vortex nozzle and said ~~separation means~~ centrifugal separator.

29. (Cancelled)

30. (Currently amended): The upright toroidal vortex vacuum cleaner system in accordance with claim 22 further comprising a hose that connects said toroidal vortex nozzle to said ~~separation means~~ centrifugal separator.

31. (Currently amended): The upright toroidal vortex vacuum cleaner system in accordance with claim 22 further comprising a hose removably attached at a first end to said toroidal vortex nozzle and removably attached at second end to said housing where the hose comprises a plurality of tubes in [[of]] a side by side configuration.

32. (Currently amended): The upright toroidal vortex vacuum cleaner system in accordance with claim 22 further

comprising a hose removably attached at a first end to said toroidal vortex nozzle and removably attached at second end to said housing where the hose comprises a plurality of tubes in [[of]] a siamese twin configuration.

33. (Currently amended): The upright toroidal vortex vacuum cleaner system in accordance with claim 22 further comprising a hose removably attached at a first end to said toroidal vortex nozzle and removably attached at second end to said housing where the hose comprises a plurality of tubes in [[of]] a concentric configuration.

34. (Currently amended): The upright toroidal vortex vacuum cleaner system in accordance with claim 22. further comprising a flexible hose removably attached at a first end to said toroidal vortex nozzle and removably attached at second end to said housing.

35. (Currently amended): The upright toroidal vortex vacuum cleaner system in accordance with claim 22 further comprising a removable hose removably attached at a first end to said toroidal vortex nozzle and removably attached at second end to said housing.

36. (Previously presented): The upright toroidal vortex vacuum cleaner system in accordance with claim 22 further

comprising a removable hose being capable of being fitted with interchangeable toroidal vortex nozzle attachments.

37. (Previously presented): The upright toroidal vortex vacuum cleaner system in accordance with claim 22 further comprising a handle removably attached to said housing.

38. (Currently amended): The upright toroidal vortex vacuum cleaner system in accordance with claim 22 further comprising a container coupled to said ~~separation means~~ centrifugal separator.

39. (Currently amended): The upright toroidal vortex vacuum cleaner system in accordance with claim 22 further comprising a removable container coupled to said ~~separation means~~ centrifugal separator.

40. (Currently amended): The upright toroidal vortex vacuum cleaner system in accordance with claim 22 wherein at least one of said fluid delivery means and said ~~separation means~~ centrifugal separator is disposed inside said upright-style vacuum cleaner housing.

41. (Currently amended): The upright toroidal vortex vacuum cleaner system in accordance with claim 22 further comprising a coarse mesh trap upstream of said ~~separation means~~ centrifugal separator to protect said fluid delivery means from large objects in said fluid flow.

42. (Currently amended): A toroidal vortex vacuum cleaner system utilizing fluid flow, said toroidal vortex vacuum cleaner comprising:

~~a toroidal vortex nozzle;~~

a centrifugal separator; [[and]]

a container coupled to said centrifugal separator;

fluid delivery means fluidly coupled to said centrifugal separator;

a toroidal vortex nozzle comprising;

~~wherein said fluid flow recirculates between said toroidal vortex nozzle and said centrifugal separator.~~

an outer tube fluidly coupled to said centrifugal separator at a proximal end, a distal end of said outer tube being open to the atmosphere;

an inner tube coaxially positioned inside said outer tube, wherein a gap between said inner tube and said outer tube forms an annular delivery duct which receives said fluid flow from said fluid delivery means; and

guide means to guide said fluid flow out of said annular delivery duct and into said inner tube, said guide means comprising an inner

fairing positioned at a distal end of said
inner tube;

wherein said guide means guide said flow such that
said flow has substantially the characteristics
of a toroidal vortex, and further wherein said
fluid flow does not escape substantially into the
atmosphere outside of said outer tube.

43. (Canceled)

44. (Previously presented): The vacuum cleaner system in accordance with claim 42 wherein the pressure in said container is greater than the pressure in said centrifugal separator.

45. (Previously presented): The vacuum cleaner system in accordance with claim 42 wherein said fluid flow is contained in concentric tubing between said toroidal vortex nozzle and said centrifugal separator.

46. (Previously presented): The vacuum cleaner system in accordance with claim 42 wherein said fluid flow is generated by an impeller upstream of said centrifugal separator.

47. (Previously presented): The vacuum cleaner system in accordance with claim 42 wherein said fluid flow is

generated by a centrifugal pump within said concentric tubing.

48. (Previously presented): The vacuum cleaner system in accordance with claim 42 wherein said fluid flow is generated by a propeller within said concentric tubing.

49. (Previously presented): The vacuum cleaner system in accordance with claim 44 wherein the difference in said pressures maintains vortex fluid flow without impeding matter from entering said container.

50. (Currently amended): The vacuum cleaner system in accordance with claim 42 ~~further comprising a~~ wherein said container ~~which~~ is removable from said centrifugal separator.

51. (Currently amended): The vacuum cleaner system in accordance with claim 42 ~~further comprising a~~ wherein said container ~~comprising~~ further comprises a door.

52. (Currently amended): The vacuum cleaner system in accordance with claim 42 ~~further comprising a~~ wherein said container ~~comprising~~ further comprises a removable plug.

53. (Previously presented): The vacuum cleaner system in accordance with claim 42 further comprising a coarse mesh trap upstream of said centrifugal separator to protect said fluid delivery means from large objects in said fluid flow.

Appl. No. 10/050,501

Amdt. dated February 23, 2005

Reply to Office action of February 16, 2005

54. (Cancelled)

55. (Cancelled)